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AFRICAN BEES OF THE GENUS *GRONOCERAS*[1]

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The bees recorded below, unless the contrary is stated, were taken by Messrs. Lang and Chapin in the Belgian Congo, on the American Museum Congo Expedition, and are in the American Museum. One species, also in the Museum, is from Natal. It has also been necessary to include the record of *G. rufa* taken by Quarré at Elisabethville. In recording *G. plesiosoma* it is noted that the actual type is in the British Museum, and is described in a paper not yet published as this paper is being written. *G. simpsoni* and *G. angolensis* are also fully described in the same paper.

GRONOCERAS Cockerell

Gronoceras armipygata (Strand, 1911)

Faradje, 2 females, Dec. 1912. This species was described from the male, taken in 1908 at Kassenje, Lake Albert. The female agrees so well that I have no doubt of its identity.

FEMALE.—Length 18–20 mm.; mandibles broad, not specially elongate, slightly reddish; clypeus densely punctured, with a highly polished median band; head and thorax with pale fulvous hair, becoming dull white on cheeks and pleura, and white at sides of metathorax; first two tergites with red hair, and second and third with apical pale reddish hair-bands, the rest of the abdomen above black, with thin black hair; ventral scopa yellowish white as far as third sternite (slightly tinged with reddish in middle of third), on fourth it is pale reddish, or largely suffused with blackish, on fifth and sixth black; tegulae pale testaceous; wings hyaline, conspicuously dusky at end, upper half of marginal cell with a fuliginous cloud; legs variably rufescent; hair on outer side of middle tarsi yellowish white or somewhat brownish.

Easily known from *G. plesiosoma* Cockerell by the smaller, shorter mandibles, the raised polished line on clypeus, the pallid tegulae, only the first two tergites covered with red hair, and other characters.

Since writing the above I have found a male from Faradje in the collection. It differs from the description in having red hind tarsi. The front coxae have each two spines, one long, one short and slender.

[1]Scientific Results of the Congo Expedition. Entomology No. 27.

Gronoceras benguellensis Cockerell

Banana, 1 male, Aug. 1915. This species resembles *G. armipygata* (Strand) in the long spines at end of abdomen, but it is separable thus:

Face broader; antennae entirely black; no light apical band on third tergite; tegulae black in middle, margin broadly rufous.....*benguellensis* Cockerell.
Face narrower; third antennal joint red in front; a broad conspicuous pale hair-band on third tergite; tegulae pale testaceous.....*armipygata* (Strand) (Faradje).

Strand (1914) states that *Megachile kerenensis* Friese is *benguellensis*, but this is not the case.

Gronoceras chapini, new species

FAMALE.—Length about 16 mm., anterior wing 13, width of abdomen about 5; black, moderately robust, mandibles and antennae black, legs black with a little reddish suffusion; tegulae large, bright ferruginous; wings dilute fuliginous, not violaceous, upper side of marginal cell dusky. Eyes brown; face broad, the orbits parallel; mandibles broad at base, not hairy, quadridentate, the third tooth small and angular; clypeus short, densely punctured but glistening, with a sharp median keel, the lower margin simple; under side of head and region about antennae and sides of face with pale fulvescent hair; clypeus with a little pale tomentum, and long black hairs, only seen in lateral view; front and vertex with thin black hair, but reddish on occiput; mesothorax and scutellum dull, minutely sculptured, mesothorax with a shining median line on anterior half, and a shining line along front edge of scutellum; hair of thorax above fulvous, short and moss-like on mesothorax, longer, with conspicuous long brown hairs intermixed, on scutellum; hair of sides of thorax fulvous above, grading to whitish below; metathorax and first tergite with clear red hair; tergites 2 to 4 short reddish-brown tomentum, giving way to very pale yellowish at base, and on margins to white bands; fifth tergite with coarse black hair, and pale hair on margin; sixth retracted in the type, the part exposed shining and slightly hairy, the sides with black hair; ventral scopa pale yellow, black on last two sternites; basal nervure falling just short of marginal; second cubital cell long, receiving recurrent nervures near to, and equally distant from, base and apex; hind wing with cubital nervure arising considerably more distant from nervellus than in *G. holorhodura* Cockerell; legs with fulvescent hair, brightly colored on inner side of tarsi; hind tarsi very thick, the basitarsi short.

Stanleyville, March 1915, 1 female. Allied to *G. armipygata* Strand, but smaller and less robust, the external channel of the mandibles much less distinct, the clypeal keel more slender, the abdomen with much more pale hair. They agree in having a single, well-developed spine at apex of front tibiae. The upper margin of hind coxa, seen from behind, is angular, whereas in *G. armipygata* it is rounded.

Gronoceras cincta (Fabricius)

Faradje, 3 females, March, April, November. A very small male, about 13.5 mm. long, is from Stanleyville, April. It looks exactly like a male of *praetexta* (Vachal), but is easily distinguished by the structure of the end of abdomen.

Gronoceras combusta (Smith)

Natal, one female (Ac. 4874); Durban, one male (Ac. 4969).

Gronoceras felina (Gerstaecker)

Faradje, 4 females, Nov., Dec. A large species with gray hair.

Gronoceras matadiensis, new species

MALE.—Length about 17 mm., anterior wing about 13.5; black, very robust; facial quadrangle much longer than broad; mandibles black, apical tooth very long, lower margin with a broad angular lamella about the middle; clypeus very coarsely, not densely, punctured, broadly shining in middle; face and front with long, pale yellowish hair, somewhat brownish about the antennae; vertex with rusty-black hair, cheeks below with yellowish white; flagellum greatly broadened; mesothorax and scutellum dull, excessively densely punctured; hair of thorax throughout dark reddish-brown; tegulae dark reddish, the disc blackened; wings hyaline, faintly yellowish, somewhat dusky apically; second cubital cell very long; legs black, middle and hind tibiae with a red spot at end, front tibiae pallid at end; front coxae with very stout spines; front basitarsi pale yellow, short and extremely broad, second and third joints also broadened and pale yellow, the last two dusky reddish; hind tarsi very stout; hair of legs dark, the fringe of front tarsi red; abdomen covered with bright red hair, brownish on first tergite; tegument of tergites mainly red, but black at base; apex with a pair of broad red lamellae.

Matadi (13° 30′ E., 6° 00′ S.), June 9, 1915 (Lang and Chapin). Compared with the species generally known as *G. bombiformis*, the apical lamellae of the abdomen are conspicuously shorter, rounder, broader, less produced apically, and the thoracic hair is browner. Between the apical lamellae there is a low elevation, but no spines are visible. This is perhaps only a variety of *G. nigrocincta* (Ritsema). The type of *bombiformis* came from Inhambane, near the southern end of Portuguese East Africa, and the description of the caudal end reads more like *G. angolensis* Cockerell than like the traditional *G. bombiformis*. *G. angolensis*, from Angola, was mixed with my series of *G. wellmani* Cockerell, but it differs by the apical armature of the abdomen, having pointed lamellae in place of long spines, and widely separated small teeth between. It is about 16.5 mm. long, and the densely, minutely punctured clypeus is totally different from that of *G. bombiformis* (as generally understood) and *G. matadiensis*.

Gronoceras musae, new species

FEMALE.—Length about 19 mm., anterior wing 11.5; robust (width of abdomen 6.5 mm.), black, including antennae, but mandibles obscurely reddish; tegulae finely punctured, very dark, but margins distinctly reddish; femora and tibiae obscurely reddish, spines of front and middle tibiae red tipped with black; clypeus with coarse black hair; sides of face, and front, with seal-brown hair, vertex with black, cheeks beneath with long white hair, stained with brownish near the eyes; mandibles elongate, with a deep broad channel on outer side, two short rounded apical teeth, and a long cutting edge, on which the teeth are represented only by a slight angulation; clypeus densely punctured, roof-like, with a shining median ridge, which at the lower end gives place to a short narrow keel; margin shining, gently concave in middle; very long dusky hairs projecting from beneath margin; vertex dullish and very finely punctured, the orbits shining; mesothorax and scutellum entirely dull, finely granular with extremely small dense punctures; hair of mesothorax thin and very short, mixed brown and pale grayish; of prothorax, including tubercles, dark seal-brown; of pleura very dark brown; of scutellum largely black, but a line of pale pubescence in suture between mesothorax and scutellum; hair of hind part of thorax, and entire first tergite, very bright and brillant fox-red; remaining tergites with short black hair, but fringe on second red, that on third slightly reddish; ventral scopa very dark brown, pure black on last sternite; wings hyaline, marginal cell with a reddish stain at base, a dusky cloud beyond end of marginal cell; basal nervure falling a little short of nervulus; legs with thin dark or brownish hair, dark even on inner side of the stout hind tarsi, but the short spurs of hind tibiae red; front tibiae at apex with three spines, the front one black and conical, the outer one red, slender, rather long, the posterior one shorter but sharp; middle tibiae similarly spined; hind basitarsi stout but not broadened.

Banana, Aug. 1915 (Lang and Chapin). This species closely resembles *G. benguellensis* Cockerell, but *G. benguellensis* has the first two tergites covered with red hair; the clypeus not evidently ridged; the first (apical) tooth of mandibles large and long; the front tibiae not prominently spined; the hind basitarsi shorter, stouter, and more hairy; the nervures reddish (entirely dark in *G. musae*), and the apical cloud of wings larger, shining purple.

Gronoceras nigrocincta (Ritsema)

Lisala, 1 female, 2 males, May; Thysville 1 female, June; Matadi, 2 females, 2 males, June; Malela, 2 females, 1 male, July; Banana, 3 females, 5 males, July, Aug., Sept.; Boma, 1 female, 3 males, June; Zambi, 2 males, 1 female, June. A large species, with black hair on thorax, and bright red on abdomen. This is *G. bombiformis* as generally understood, but there is reason to think that the type, from Inhambane on the east coast may be different. (See also 1933, Rev. Zool. Bot. Afr., XXIII, pp. 77–79.) The species is to be called *G. nigrocincta* (Ritsema).

Gronoceras plesiosoma Cockerell

Faradje, 2 females, Dec. 19. This species was described from the female, taken at Dimawo, Gold Coast (Simpson), in the British Museum. It is about 19.5 mm. long, very like *G. simpsoni* Cockerell, but differing in the larger, considerably more elongated mandibles; the clypeus rugose, the middle flattened, not at all ridged (in *G. simpsoni* it is more or less ridged, but not keeled); tegulae entirely clear red; clear part of wings hardly yellowish, apical portion very dark; abdominal segments 2 to 4 with conspicuous white hair at sides; first three tergites densely covered with very bright red hair, fourth with thin whitish hair. The abdomen of *G. simpsoni* has bright red hair, black on the last two tergites. *G. simpsoni* is closely allied to *G. quadrispinosa* (Friese), which is not identical with *G. praetexta* (Vachal), as I formerly supposed probable.

Gronoceras rufa (Friese)

Elisabethville, female (P. Quarré), recorded in error as *G. holorhodura* Cockerell in Rev. Zool. Bot. Afr., XXIII, p. 81.

Gronoceras rufa profusca (Vachal)

Faradje, 1 female, Nov. This has the hair at sides of face and clypeus dark brown, and dark hair on vertex. The thoracic hair is pale, but I suppose that the degree of melanism differs in different specimens. The original *profusca* came from between Mpika and Chunda, in Northern Rhodesia.

I find that I have confused two species, appearing exactly alike, under the name *G. holorhodura*, in my discussion in Rev. Zool. Bot. Afr., XXIII, p. 81. The females are separable thus:

Mandibles long and comparatively narrow, with three teeth, the first two large, the third forming an obtuse angle; clypeus conspicuously keeled; hair at sides of clypeus mainly dark, not forming conspicuous overlapping brushes; ocelli smaller; tegulae mainly red; legs with thin red hair; front tibiae with a very long sharp outwardly directed spine at apex, and a little slender spine at posterior outer corner. (Tenke, Katanga).....*holorhodura* Cockerell.

Mandibles very broad, quadridentate counting inner corner, the teeth broad but short and obtuse; clypeus coarsely punctured, not at all keeled, the upper middle shining; hair at sides of clypeus red (dark in the *profusca* form) forming large converging brushes over margin; from beneath lower margin of clypeus is a little stiff fringe of pale hairs; ocelli larger; tegulae black, with red hair anteriorly (Friese describes tegulae as red-brown); legs mainly with short black hair, but the front femora in front copiously covered with long red hair; front tibiae not spined. (Elisabethville).....*rufa* (Friese).

Vachal, in describing *Gronoceras praetexta* (1910, Ann. Soc. Ent. Belg., LIV, p. 307), sagaciously remarks on the resemblance of *Megachile rufa* Friese, and says that he would have considered *G. praetexta* to be its male, but for the fact that the mandibles have at least three teeth, whereas in the *M. bombiformis* group (my *Gronoceras*), to which *M. praetexta* belongs, they have two teeth and a long cutting edge. However, the mandibles of *Gronoceras plesiosoma* Cockerell are entirely of the same type as those of *G. rufa*, and this species also lacks the prominent spines on front tibiae.

Friese based *Megachile rufa* (1903) on the female, from Ikutha, East Africa. In the following year he described what he considered the male, from Natal. The American Museum has a specimen of this male from Mfongosi, Zululand, received from Friese. This is not at all like *Gronoceras*, and whether or not the *M. rufa* female is strictly referable to that genus, I feel sure that the assigned male has nothing to do with it. It may be added that *G. holorhodura* and *G. rufa* exist in precisely the same faunal area in Katanga, and the case adds another to the numerous instances in Africa in which two megachilid bees, actually quite distinct species, but excessively alike, inhabit the same country.

Gronoceras tricolor (Friese)

Gamangui, 1 female, Feb.; Batama, 1 female, Sept.; Poko, 1 female, Aug.; Ava Kubi, 3 males, Nov.; Stanleyville, 2 males, April, May; Thysville, 1 male, June. The hair on disc of third tergite varies from practically black to reddish. In one Stanleyville male the hair on third and fourth tergites is colored alike, but in the other the third (except the apical band) has the hair black, agreeing with the second tergite and abruptly contrasting with the third.

Gronoceras wellmani Cockerell

Matadi, male, June 9, 1915. The male looks like *G. bombiformis*, but is easily distinguished by the two long spines at end of abdomen.

POSTSCRIPT.—Dr. H. Bischoff has kindly furnished an account of the holotype of *G. bombiformis* in the Berlin Museum, and it is now certain that *G. bombiformis* is identical with *G. wellmani*.